

Inside Sea Grant



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S.C. Sea Grant Consortium Program Impacts

Contents

Humans and the coastal landscape

- Southeast Governors Form Ocean Alliance . . . 1
- Citizens' Guide to Planning Available 1
- Scientists Work to Understand Hypoxic Events . 2
- 2009 Beach Sweep/River Sweep 2

Humans and the risks of coastal natural hazards

- New Blog Focuses on Climate Change Issues . . 3
- Coastal Heritage Addresses Climate Change . . 3

Coastal-dependent economy

- Lowcountry Shrimpers Study Alaskan Success . . 3
- New Publication Provides Marine Protected Areas Fisheries Regulations. 3
- Wallet Card Promotes Local Seafood 4

Scientific literacy and workforce development

- Project Brings Marine Science to Minority Students 4
- COSEE-SE Leadership Institute a Success . . 4
- Marine Debris Booklet Published 4

Sea Grant omnibus grant awards 2010-2012 5

Awards and staff news

- Coastal Heritage Wins Five Awards 5

Humans and the coastal landscape

Southeast Governors Form South Atlantic Ocean Alliance

On October 19, 2009, governors of four southeastern states announced an agreement to work together to



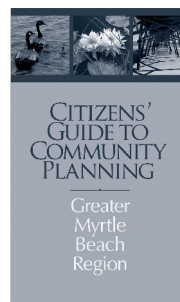
better manage and protect ocean and coastal resources, ensure regional economic sustainability, and respond to disasters such as hurricanes. The agreement establishes the South Atlantic Alliance (SAA) among North Carolina, South Carolina, Georgia, and Florida. The mission of the SAA is to implement science-based policies and solutions that enhance and protect the value of coastal and ocean resources to support the region's culture and economy. The SAA will leverage resources from the public and private sectors, business and industry communities, local governments, federal agencies, academic institutions, and non-governmental organizations.

The agreement was signed by North Carolina Gov. Bev Perdue, South Carolina Gov. Mark Sanford, Georgia Gov. Sonny Perdue, and Florida Gov. Charlie Crist. Priority issues are Healthy Ecosystems, Working Waterfronts, Clean Coastal and Ocean Waters, and Disaster-Resilient Communities.

The Consortium developed and is hosting a Web site for the SAA. For more information, visit www.southatlanticalliance.org.

Citizens' Guide to Community Planning Available

A free publication, *Citizens' Guide to Community Planning: Greater Myrtle Beach Region*, is now available. The guide is a basic primer for the land-use planning techniques deployed by the eight government bodies in Horry County, including the municipalities of N. Myrtle Beach, Atlantic Beach, Myrtle Beach, Surfside Beach, Loris, Conway, and Aynor. This publication helps citizens understand planning processes in those communities; it describes each community's land-use plan, zoning and development



regulations, and provides contact information for planning departments in the area. Also included is a section about specific special purpose zoning districts and

planning techniques. The guide was funded by the Consortium's Coastal Communities Initiative, and is the result of a collaborative effort between Clemson University Cooperative Extension and the S.C. Sea Grant Extension Program. To order a copy, visit www.scseagrant.org/content/?cid=156 or call (843) 953-2078.

Inside Sea Grant is published two times a year to inform interested constituents about goals, activities, and accomplishments of the S.C. Sea Grant Consortium.

S.C. Sea Grant Consortium is a university-based state agency that enhances the practical use and conservation of South Carolina's coastal and marine resources to foster a sustainable economy and environment.

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Scientists Work to Understand Hypoxic Events off Myrtle Beach

In 2004 anglers were startled by unusually large catches of flounder in the waters off the Myrtle Beach area, often called Long Bay. Hypoxic, or low-oxygen, levels in the water had created a "dead zone" that drove fish toward the shoreline. Then, in August 2009, water quality monitors indicated that Long Bay experienced an anoxic, or no oxygen, event.



Photo: S.C. Sea Grant Consortium

In a series of studies sponsored by the S.C. Sea Grant Consortium, S.C. Department of Health and Environmental Control-Office of Ocean and Coastal Resource Management, S.C. Department of Natural Resources, and Coastal Carolina University, scientists are researching a number of physical, biological, chemical, and geological coastal-ocean processes in Long Bay in order to try to identify the causes of these phenomena. To assist them in their research, the Consortium assembled a Long Bay Working Group (LBWG) to collaborate on these efforts and develop strategies to support and conduct further work.

These efforts have fostered additional studies, including research to evaluate the contribution of groundwater discharge to water-quality issues, as well as two pilot studies using autonomous underwater vehicles (AUVs) to validate and expand the findings. Ultimately, the LBWG has to develop tools for use in forecasting future low-oxygen events in Long Bay.

The research results are already being used by coastal and fishery managers and local communities. For more information about the Long Bay hypoxia study, visit <http://nautilus.baruch.sc.edu/longbay>

or contact Denise Sanger at denise.sanger@scseagrant.org or (843) 953-2076.

Thousands Participate in 2009 Beach Sweep/River Sweep

Approximately 7,300 volunteers across South Carolina participated in the 21st annual Beach Sweep/River Sweep on September 19 to clear litter from beaches, rivers, lakes, marshes, and swamps. About 5,800 of those volunteers worked along the coast from Waties Island to Daufuskie Island, and many creeks and rivers in between.

The event, organized by the S.C. Sea Grant Consortium in partnership with the S.C. Department of Natural Resources, is the largest one-day, volunteer litter cleanup of its kind. Statewide, groups were expected to exceed the amount of trash removed in 2008, which was about 60 tons. From 1988-2008, nearly 110,000 volunteers have removed a total of 1,010 tons of debris.

Major sponsors for the 2009 Beach Sweep/River Sweep include Applied Technology and Management, BP Cooper River Plant, Charleston City Marina, Charleston Water System, Coastal Expeditions, Duke Energy Foundation, Mount Pleasant Waterworks, Ocean Conservancy, S.C. State Ports Authority, and Walmart Market 123.



Photo: S.C. Sea Grant Consortium

To view photos and cleanup results, visit www.scseagrant.org/content/?cid=49. For more information or to volunteer for the 2010 cleanup, contact Susan Ferris Hill at (843) 953-2092 or susan.ferris.hill@scseagrant.org.

Humans and the risks of coastal natural hazards

New Blog Focuses on Climate Change Issues

Jessica Whitehead, regional climate extension specialist for the South Carolina and North Carolina Sea Grant College programs, has a new blog at <http://blogs.ncseagrant.org/coastalclimate>. The blog provides information on the implications of



climate variability and change, and highlights new research on this subject. The blog is useful to stakeholders and

other extension agents for ideas about potential climate-outreach programs.

Jessica's program—the Carolinas Coastal Climate Outreach Initiative—is a NOAA-funded partnership among the S.C. Sea Grant Consortium, the N.C. Sea Grant College Program, and the Carolinas Integrated Sciences and Assessment center at the University of South Carolina. For more information about the initiative in particular and climate issues in general, contact Jessica at (843) 693-1506 or jessica.whitehead@scseagrant.org.

Coastal Heritage Addresses Climate Change

Recent issues of *Coastal Heritage*, the award-winning quarterly publication of the S.C. Sea Grant Consortium, have covered various aspects of climate change, from the effects of ocean acidification on deep-sea corals to

climate impacts on ocean health and sea-level rise. Each issue has a corresponding *Curriculum Connection*, a supplemental classroom resource that is aligned with South Carolina state standards for the appropriate grade level.



Coastal Heritage and *Curriculum Connection* are available online at www.scseagrant.org/sections/?cid=82. To order hard copies of either publication, call (843) 953-2078.

Coastal-dependent economy

Lowcountry Shrimpers Study Alaskan Success

S.C. Sea Grant Fisheries Extension Specialist Amber Von Harten and six lowcountry shrimpers traveled to Alaska in March 2009 to learn how fishermen there have established new ways of doing business. The South Carolina shrimping industry has been devastated by low-cost imports and rising fuel costs, but Alaska's salmon fishermen



Photo: S.C. Sea Grant Extension Program

have confronted similar floods of imports of farmed salmon by becoming savvy business-people. Shrimpers attended

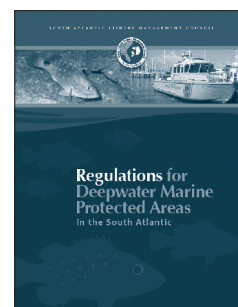
workshops on topics such as direct marketing to consumers, fisheries cooperatives, and building leadership skills. They also learned about state and federal programs that help fishermen improve their business practices.

The five-day Shrimp Fisherman Exchange workshop, a collaborative effort of the S.C. Sea Grant Extension Program (SCSGEP) and the Alaska Sea Grant Advisory Program, was supported by a grant to Clemson University and the SCSGEP from the U.S. Department of Agriculture's Intensive Technical Assistance Program. For more information, contact Amber at (843) 470-3655, ext. 112 or ambevnh@clemson.edu.

New Publication Provides MPA Fisheries Regulations

The S.C. Sea Grant Consortium and the South Atlantic Fishery Management Council have co-published *Regulations for*

Deepwater Marine Protected Areas in the South Atlantic. This comprehensive guide includes a history of Marine Protected Area (MPA) development, a list of snapper-grouper species protected in each of the eight areas, and detailed regulations, along with maps, coordinates, and descriptions of the MPA sites.



South Atlantic, Georgia, and the East Coast of Florida south to Key West. Visit www.safmc.net for information about the Council, fisheries management, and current regulations. To download a PDF of the MPA publication, visit www.scseagrant.org/content/?cid=154 or call (843) 953-2078.

The South Atlantic Fishery Management Council is responsible for the conservation and management of fish stocks in federal waters (ranging from 3 to 200 nautical miles) off the coasts of North Carolina,

Coastal-dependent economy

Wallet Card Promotes Local Seafood

A handy new wallet card, *Seafood by the Seasons*, describes the seafood species landed in South Carolina and the seasons in which each species is available in the marketplace. The card was produced as a result of a partnership among the South Carolina Aquarium's Sustainable Seafood Initiative, the S.C. Sea Grant Extension



seafood, and provides a brief statement

Program, and the S.C. Seafood Alliance.

The card helps promote the purchase and consumption of locally harvested seafood, aids consumers in understanding the seasonality of local

about the sustainability of each species. The card also lists Gold and Platinum restaurant partners in South Carolina—those that have scored among the highest on a comprehensive sustainability assessment. The wallet cards are available at the South Carolina Aquarium and the Consortium offices and a PDF can also be downloaded at www.scseagrant.org/content/?cid=154.

Scientific literacy and workforce development

Project Brings Marine Science to Minority Students

Minority students often aren't aware of career possibilities in marine sciences and other geosciences. To help increase diversity in these fields, Elizabeth Vernon Bell, marine-education specialist with the S.C. Sea Grant Consortium and the Center for Ocean Sciences Education Excellence-Southeast (COSEE-SE), participated in a student mentoring initiative funded by the National Science Foundation.



Photo: S.C. Sea Grant Consortium

"Enhancing Diversity in the Geosciences: Mentoring and Research Modeling for Middle School and University Students" provides marine-science training for S.C. State University (SCSU) students who are majoring in a science field and who, in turn, mentor middle-school students at the Felton Laboratory School located on the SCSU campus. Elizabeth assisted in the coordination of the field experiences for mentors and mentees at the S.C.

Department of Natural Resources (SCDNR) and the National Oceanic and Atmospheric Administration's Hollings Marine Laboratory, where they studied oyster habitats, water quality, and estuarine ecosystems. Institutions involved in the project include COSEE-SE, the Hollings Marine Laboratory, SCSU, Felton Laboratory School, SCDNR, and the Orangeburg National Fish Hatchery. To learn more about diversity programs, contact Elizabeth at elizabeth.vernon@scseagrant.org or (843) 953-2084.

COSEE-SE Leadership Institute a Success

Educators with the Center for Ocean Sciences Education Excellence-Southeast (COSEE-SE) hosted the annual Leadership Institute at the Belle W. Baruch Marine Field Laboratory in Georgetown, S.C., in July 2009. The theme for this Institute was climate change in the Southeast, and topics covered included oceans' impact on climate, climate change drivers, evidence of past climate change, ocean acidification, and sea-level rise. More than 20 formal and informal educators from North Carolina, South Carolina, and Georgia participated in a week of presentations by scientists, field experiences, and hands-on activities. For information about COSEE-SE, including future professional development opportunities, contact Elizabeth Vernon Bell at

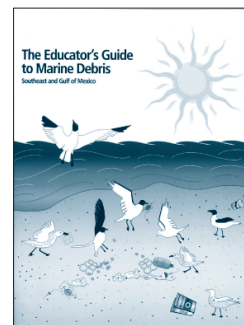


Photo: Newberry High School

elizabeth.vernon@scseagrant.org or (843) 953-2084. Visit the COSEE-SE Web site at www.cosee-se.org for coastal- and ocean-science resources and events targeted to educators and scientists.

Marine Debris Booklet Published

A new publication, *The Educator's Guide to Marine Debris*, is designed for educators in both formal and informal settings. The guide includes information about marine debris, lessons useful for middle-school levels, and regional and national marine debris resource listings. Visit www.scseagrant.org/content/?cid=153 or call (843) 953-2078 to order the guide.



Sea Grant omnibus grant awards 2010–2012

The Consortium recently completed its biennial Request for Proposals for National Sea Grant omnibus funding. The following projects have been selected for funding over the next two years.

- Submarine Groundwater Discharge to Long Bay, S.C.: Preliminary Assessment of Land Use Impact, Geological Controls, and Nutrient Loads. Principal Investigator: **Richard Viso**, Coastal Carolina University.
- Characterization of Wave and Current Energy Levels in Estuarine Waters for Ecological and Particulate Dispersion Studies: Case Study Winyah Bay, S.C. Principal Investigator: **George Voulgaris**, University of South Carolina.
- Infiltration versus Retention for Stormwater Quantity and Quality Management: A Continued Assessment of Rainfall Response in Coastal South Carolina Watersheds. Principal Investigator: **Dan Hitchcock**, Clemson University.
- Linking Residential Development and Organic Matter Loading to the Coastal Zone: The Role of Stormwater Ponds as Sources of Bioreactive Organic Carbon and Nitrogen. Principal Investigator: **Erik Smith**, University of South Carolina.
- Tagging of Horseshoe Crabs in Conjunction with Commercial Harvesters and the Biomedical Industry in South Carolina. Principal Investigator: **Larry DeLancey**, S.C. Department of Natural Resources.
- Drought and Decline of Blue Crabs in South Carolina. Principal Investigator: **Michael Childress**, Clemson University.
- Development of Non-Lethal Genetic Techniques for Age and Sex Determination in Two Recreationally Important Fishes in South Carolina. Principal Investigator: **Tanya Darden**, S.C. Department of Natural Resources.
- Field Evaluation of Diploid and Triploid Single Eastern Oysters in South Carolina:

Incorporating Physical Methods to Ameliorate Excessive Recruitment by Native Oysters. Principal Investigator: **Peter Kinsley-Smith**, S.C. Department of Natural Resources.

- Commercialization of Bait Shrimp (*Litopenaeus setiferus*) Aquaculture through Year-Round Production in Indoor Facilities Using Clear Water and Biotic-based Culture Systems. Principal Investigator: **John Leffler**, S.C. Department of Natural Resources.
- Predicting Building Envelope Failures of Residential Structures Due to Atlantic Basin Hurricane Wind Hazard. Principal Investigator: **WeiChiang Pang**, Clemson University.
- The Gulf Stream Transect Oceanography Program (GuSTO): Undergraduate Workforce Training in Ocean Science Research. Principal Investigator: **Leslie Sautter**, College of Charleston.

Additional information about these projects can be found on the Consortium's Web site at www.scseagrant.org/research.

Awards and staff news

Coastal Heritage Wins Five Awards

Coastal Heritage, a quarterly publication of the S.C. Sea Grant Consortium, received five awards in competitions during 2008-2009. The periodical won the following awards:

- Distinguished Award from the Society of Technical Communications (STC) Carolina chapter competition;
- Award of Excellence from the STC international competition;
- Award of Excellence in the Low-Budget Publications category in the Council for Advancement and Support of Education (CASE) Region IV competition;
- Award of Merit in the Other Magazines category in the CASE Region IV competition; and
- 2009 APEX Award of Excellence in the Magazines and Journals category.

Rick DeVoe, executive director, is currently

serving as a member of a number of national, regional, and state boards and committees. Rick is a member of the Executive Planning Team for the South Atlantic (Governors Ocean) Alliance, the Regulatory Task Force for Coastal Clean Energy (South Carolina Energy Office), the South Carolina Shoreline Change Advisory Committee (SCDHEC-Office of Ocean and Coastal Resource Management [OCRM]), and the Steering Committee for the South Carolina Ocean Planning Initiative (SCDHEC-OCRM).

Jack Whetstone, marine aquaculture specialist, received the 2008 Conservation Educator of the Year award from the Georgetown Soil and Water Conservation District for his dedicated leadership in natural resource education.

April Turner, coastal communities specialist, was appointed to the South Carolina Nature-based Tourism Association

Board of Directors for 2009-2010.

Patty Snow, Web site developer, serves on the Board of Directors for the S.C. Government Webmasters Association for 2009-2010.

Articles by **John Tibbetts**, science writer, were cited in two major reports about climate change released in 2009:

- "After the Storm," the Spring 2006 issue of *Coastal Heritage*, was cited in U.S. Global Change Research Program report, *Coastal Sensitivity to Sea-Level Rise: A Focus on the Mid-Atlantic Region*, published by the U.S. Environmental Protection Agency, 2009.
- John's article, "Combined sewer systems: down, dirty, and out of date," originally in the July 2005 issue of *Environmental Health Perspectives*, was cited in *Global Climate Change Impacts in the United States*, published by Cambridge University Press, 2009.



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Highlights:

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